

ABSTRACT OF THE DISCLOSURE

Short-wavelength photons are used to ablate material from a low work function target onto a suitable substrate. The short-wavelength photons are at or below visible wavelength. The elemental composition of the deposit is controlled by the composition of the target and the gaseous environment in which the ablation process is performed. The process is carried out in a deposition chamber to which a short-wavelength laser is mounted and which includes a substrate holder which can be rotated, tilted, heated, or cooled. The target material is mounted onto a holder that spins the target during laser ablation. In addition, the deposition chamber is provided with a vacuum pump, an external gas supply with atomizer and radical generator, a gas generator for producing a flow of molecules on the substrate, and a substrate cleaning device, such as an ion gun. The substrate can be rotated and tilted; for example, whereby only the tip of an emitter can be coated with a low work function material.

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